pandemic SURGERY

An Integrated Ethics and Technical Reference

Department of Surgery
College of Medicine and Philippine General Hospital
University of the Philippines Manila

Pandemic Surgery

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Alvin B. Caballes

Marie Carmela M. Lapitan

Editors

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DEPARTMENT OF SURGERY
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Medicine is an ever-changing field, and COVID-19 is a novel disease for which much remains unknown. The editors and authors of this e-book have made every effort to provide information that is accurate and complete as of the date of publication. However, in view of the rapid developments in the field, contents may be subsequently found to be inaccurate or erroneous. This book is meant primarily as a reference for surgical professionals, trainees and administrators, and is not intended to prescribe or regulate actual surgical care.

Contents

Foreword

If we cite ancient Greek mythology, the 'Mousai' or 'muses', serve as the inspirational goddesses of literature, science and the arts. They were the sources of knowledge seen in poetry and myths. In the modern era, 'muse' may refer to anyone or anything which inspires a writer.

As I pore through the pages of this document, after being gracefully requested (and honored) to give the foreword, I cannot help but relate to the current "muse" of the twenty first century global malady known as "Corona", as being the Greek 'muse', which greatly inspired the two editors of this valuable and insightful piece.

The reader will appreciate the form and functionality of this work, that situates surgical practice during the present pandemic. Through a series of seemingly typical situations encountered by surgeons, critical decision crossroads are reached, and ethical as well as technical concerns are brought to the fore. My favorite is the fourth scenario, which brings a true–to–life dilemma front and center: "the operating complex, operating at reduced capacity due to manpower and logistical issues". There are three cases at the emergency department needing urgent surgical intervention. But there is seemingly only one operating theater available, as the other room has a newly arrived case for tracheostomy. Who gets to be operated on? In this and the other scenarios, the authors have captured the divergence between 'ethics' and 'morals'. Established morals based on past experiences will dictate adhering to guiding principles, whereas ethical considerations will force the surgeon to abide by specific rules of action and behavior.

Taking the information and knowledge from more than one hundred fifty scientific publications on the subject matter as well as the experience, opinions and values of the local experts and practitioners, we are assured of a well–composed and excellently crafted manuscript. This will help many a surgeon to realize optimal surgical outcomes during this pandemic, properly aligned with accepted ethical guidelines and moral norms.

Our Department is proud of our staff who contributed to this work. We are prouder still to be able to share this with our surgical colleagues, as we strive together to be of service, at this crucial time, for our patients and our country.

Crisostomo E. Arcilla, Jr., MD
Associate Professor and Chair
Department of Surgery, College of Medicine and Philippine General Hospital,
University of the Philippines Manila

Preface

The pandemic caused by a new virus, SARS-CoV-2, has not only afflicted many within a short period but also strained the delivery of health services. The impact on surgical services has been significant. It has led to manpower and facility shortages, and has also rendered unsuitable many established practices and procedures. Surgical units, therefore, have had to respond and adapt rapidly.

It is fortunate that restrictions on COVID-19-related reports have been eased by the leading scientific journal publishers—facilitating the dissemination of new developments and findings. Due to the ready availability of these reports, international bodies as well as local professional organizations have been able to expeditiously craft and release corresponding practice advisories. There is therefore a plethora of COVID-19 guidelines currently available, including those tailored for specific surgical specialties. Still, there is a dearth of material on the ethical foundations, if not a more thorough presentation of the theoretical basis, for most of the provided recommendations. Many operational guidelines are also anchored on protocols utilized for recent viral outbreaks, such as SARS, MERS, Ebola, and Zika, and presumed to be applicable to the ongoing pandemic.

The PGH Department of Surgery had earlier published a handbook containing procedural guidelines for its staff. While primarily meant to standardize the department's operations as part of a designated COVID-19 referral center, it has also been widely used as a reference by other local hospitals. The current book was conceived as a complementary volume, to provide the conceptual basis for the corresponding structural and procedural adjustments in surgical care during a pandemic. The material was developed and written by faculty and residents of the department, and were extensively reviewed by practicing surgeons, academics, and advocates. It is meant to be of value for surgical administrators, clinicians, and trainees at the PGH as well as most other local institutions. While the coverage is extensive, the provided material, for purposes of conciseness and relevance, is admittedly not exhaustive. The editors are aware that a lot remains unknown regarding SARS-CoV-2 as well as the actual effectiveness of COVID-19 measures. These will hopefully be addressed in succeeding editions of this book.

Contributors

Alvin B. Caballes, MD, MDE, MPP

Professor, Department of Surgery and Chief, Social Medicine Unit, College of Medicine, University of the Philippines Manila, and Member, National Transplant Ethics Committee, Department of Health

Marie Carmela M. Lapitan, MD

Research Professor, Institute of Clinical Epidemiology, National Institutes of Health and Clinical Professor, Department of Surgery, College of Medicine, University of the Philippines Manila

Claudine Rosario B. Lukban, MD

Resident, Plastic and Reconstructive Surgery, Department of Surgery, Philippine General Hospital, University of the Philippines Manila

Samantha Jiselle G. Siahetiong, MD

Resident, General Surgery, Department of Surgery, Philippine General Hospital, University of the Philippines Manila

Maureen Elvira P. Villanueva, MD

Fellow, Colon and Rectal Surgery, Department of Surgery, Philippine General Hospital, University of the Philippines Manila

Brent Andrew G. Viray, MD

Resident, General Surgery, Department of Surgery, Philippine General Hospital, University of the Philippines Manila

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Abdel Jeffri A. Abdulla, MD
Associate Professor, Department of Anatomy, College of Medicine, University of the Philippines Manila, and Member, National Transplant Ethics Committee, Department of Health

Maria Luisa S. Acu, MD
Associate Professor, Department of Obstetrics and Gynecology, St. Luke's College of Medicine; Head, Section of Obstetric ang Gynecologic Ultrasound, Capitol Medical Center

A' Ericson B. Berberabe, MD
Associate Professor and Head, Surgical Review Committee, Department of Surgery, College of Medicine and Philippine General Hospital, University of the Philippines Manila

Annabelle R. Borromeo, PhD
Citizen's Representative, Health Technology Assessment Committee, Department of Health 2019-2021

Ana Melissa H. Cabungcal, MD
Clinical Associate Professor, Department of Surgery, College of Medicine and Philippine General Hospital, University of the Philippines Manila

Jose Luis J. Danguilan, MD
Retired Professor of Surgery, College of Medicine, University of the Philippines Manila, and Former Executive Director, Lung Center of the Philippines

Fay S. de Ocampo, MD
Clinical Associate Professor, Section of Newborn Medicine, Department of Pediatrics, College of Medicine and Philippine General Hospital, University of the Philippines Manila

Daniel A. Dela Paz, Jr, MD
Retired Associate Professor of Surgery, College of Medicine, University of the Philippines Manila

Ricardo Sotelo Guanzon, MD
Dean, College of Medicine, Mariano Marcos State University, and Medical Specialist IV, Mariano Marcos Memorial Hospital and Medical Center, City of Batac, Ilocos Norte

Johann Paulo S. Guzman, MD
Associate Professor, College of Medicine, West Visayas State University, La Paz, Iloilo City, and Medical Specialist II, Department of Surgery, Western Visayas Medical Center, Mandurriao, Iloilo City

Joel U. Macalino, MD, LLB
Clinical Associate Professor, Department of Surgery, College of Medicine, and Medical Specialist III, Philippine General Hospital, University of the Philippines Manila

Ricardo M. Manalastas, Jr., MD
Professor, Department of Obstetrics-Gynecology, College of Medicine and Philippine General Hospital, University of the Philippines Manila, and Member, Philippine Health Ethics Research Board

Renato B. Manaloto, LLB
Assistant Professor, Department of Philosophy, College of Social Science and Philosophy, University of the Philippines Diliman

Rolando. A Padre, MD
Chief of Hospital, Quezon Medical Center, Lucena City

Maria Sara P. Padua–Labilles, MD
Medical Specialist IV and Chair, Outpatient Department, Bicol Medical Center; President, Camarines Sur Medical Society 2019-2020

Marie Dione P. Sacdalan, MD
Clinical Associate Professor, Department of Surgery, College of Medicine, and Medical Specialist III, Philippine General Hospital, University of the Philippines Manila

Maria Asuncion Silvestre, MD
President, Kalusugan ng Mag-Ina (KMI); Member, Guideline Development Group, WHO Interim Guidance on Clinical Management of COVID Illness; DOH Family Health Office, Technical Working Group, Maternal & Newborn Health

How to Use This Book

The contents of this book are arranged into chapters that correspond to broad areas of surgical care. Vignettes are presented at the start of each chapter, which ground the succeeding discussions in the realities of day-to-day practice. Guide questions are then provided to better focus the reader's attention to the more important points of concern. The wider context and the relevant ethical precepts and technical points are subsequently discussed. The onus is on generalizability rather than on specific applications. The chapters conclude with a summary of the important points, which essentially answer the issues raised in the enumerated questions. An extensive list of references is provided at the end.

The reader may opt to simply concentrate on the key points at the end of every chapter. These are, however, simply summative statements and are not meant to be prescriptive. Also, as a key objective of this book is to provide the ethical and technical basis for possible courses of action, it will be best for the reader to go over these considerations still. While some of the discussions are area–specific, many are cross–cutting—such as the rationale for and prerequisites of informed consent, the ethical basis for rationing, and the technical requisites for triage. Likewise, even as each chapter is relatively self-contained in terms of providing the material that are relevant for the given and similar cases, there is also a progression in the depth and detail of important issues in succeeding chapters.

There are other elements of the book which can assist the reader. Keywords are highlighted in the sections where their contexts or applications are emphasized. A case scoring template for the prioritization of surgeries is provided in the Appendix. The key terms are categorized and page-referenced in the Index. An exhaustive bibliography is provided, and the reader can refer to the cited sources, most of which are freely accessible online, should more specific details be needed.

This book has been published in an electronic form purposely to allow ready access especially for Philippine surgeons as well as facilitate modifications for succeeding editions. New findings can be expected to still come in the coming months, and readers may want to have specific areas augmented or more relevant material included. Communications concerning the latter may be sent by email to PGHsurgerypandemicethicalguide@gmail.com.

Chapter I

Staff Allocation

Alvin B. Caballes

The hospital has had to attend to a series of cases suspected to have COVID-19. Several patients were admitted but not necessarily placed in isolation. The test results of two patients came back as being positive for SARS-CoV-2. In the meantime, several staff members have been complaining of flu-like symptoms. They, as well as those who had been exposed to the suspected and confirmed cases, have been placed on quarantine. The hospital is now short on staff. As there are also fewer patients seeking surgical care, the remaining surgical staff have been required to assume other duties in the hospital. Most of the senior staff have refused to participate, citing heightened personal risks.

Guide Questions

Can physicians and surgeons be compelled to work in risky situations?

Can surgical staff assume non-surgery tasks?

Who should perform surgeries during times of crisis?

Should SARS-CoV-2 positive staff continue to serve?

What are the staff concerns during operational transition periods?

Context

There are many ways of classifying the severity of a health calamity, such as the current COVID-19 pandemic, as well as the corresponding readiness of a hospital. A convenient system is one that incorporates both—defining a facility's capacity in relation to the concurrent pandemic exigencies. This is exemplified by the following **phased standards of care**:[1]

- **Conventional** - more than the regular requirements for patient care, but usual hospital resources and operational capacities are sufficient
- **Contingency** - due to an increased demand for patient care, the hospital's physical and human resources need to be internally rearranged but the level of care is still sufficient
- **Crisis** - insufficient staff, supplies, or space; extreme operational conditions requiring disaster–type triage

The Department of Health (DOH) has a community-centered disaster alert code system.[2] Many hospitals, including the PGH, will find themselves at contingency and even crisis levels during pandemic peaks. As circumstances change, standards of care, inclusive of personnel allocation, will need to be adjusted accordingly.

Ethical Considerations

Surgeons, being health personnel, are obligated to provide care to patients. The bioethical principle of **beneficence** underlines the need for health providers to act for the good, or net benefit, of patients. Emanating from

these are related duties: providing care for patients; supporting colleagues, institutions and society; acting in the best interests of family or loved ones; and, be reasonably informed about the relevant aspects of a condition, such as COVID-19.[3]

It has been said that the **duty to care** is heightened during pandemics, given: their greater capability to respond than non-physicians; the implied consent for risks that come with the profession; and, the common recognition of a social contract to be of service during emergencies.[4] However, surgeons and other health personnel also have a right to not unduly expose themselves to infection risks. This is in line with another bioethical principle, that of **non-maleficence**, wherein harmful consequences should be avoided or minimized. The same consideration extends to their families and immediate community.[3] These limitations are recognized in existing professional codes of ethics and accepted as valid grounds to refuse the provision of service.[5,6] These do not, however, preclude health personnel from still committing themselves to serving others even at considerable risks to themselves.[7] It must be understood nonetheless that the risks are not absolute and can be minimized. **Justice**, the third principle, upholds the importance of fair treatment and respect for the rights of all stakeholders.[3] Taken together, the mentioned bioethical principles provide the basis for the significance of **reciprocity**. In cognizance of this value, institutions, if not society as a whole, have an obligation to attend to the safety and welfare of health workers.[4,8] Thus, the PGH has, among others, ensured the availability of protective equipment, set up isolation measures, adjusted work shifts, and even provided housing accommodations to address these concerns.[9]

In the event of contingency, and particularly during crisis, levels of hospital services, health personnel may have to assume responsibilities outside of their expertise or training. Such assignments, particularly for high-risk areas, should be **voluntary** and require **informed consent**.[10,11] These requisites are in accordance with the fourth key bioethical principle, that of **autonomy**. With the latter, the decisions of individuals on courses of action that bear upon them, premised on an adequate assessment of risks and benefits, are to be respected.[3] **Coercion**, which may include lauding as heroes those who are exposed to risks while not having any choice or even adequate protection, should be avoided.[12] Likewise, **adequate training**, for both personal safety

as well as technical proficiency in the newly assigned areas or tasks, should be provided.[4] Personnel who are **not qualified or refuse** to be assigned to critical areas can be redirected to support work.[8,13] Those who, despite being given sufficient physical protection, suitable alternatives, and even added material incentives, still opt not to render adequate service or commensurate work may be subject to the appropriate administrative sanctions.

Surgeons may not only be required to provide non-surgical services. As personnel may be given other posts or get to be ill or quarantined—yet, patients may still require emergent surgical interventions—there are additional concerns regarding the capacity of the remaining staff to attend to these cases. Surgical residents may continue to perform procedures, and such will not be construed as **"ghost surgeries"** so long as they have the capability for these, do so under the supervision of the attending surgeon/s, and informed consents for the planned procedures are properly obtained.[14] As much as possible, the most skilled or experienced surgeon should attend to more complicated cases. In **"call for help**" situations, even senior staff should readily assist in problematic cases.[6,15]

Technical Considerations

Studies have shown that inadequate personnel protection and practices as well as exposure during particular patient care episodes (e.g., intubation, contact with body secretions, etc.) were associated with infection risks among health care workers. Conversely, infection control training mitigated against these risks. Psychological distress was also common among health workers.[16] Surgeons, and allied health staff, should therefore be given training and repeated guidance on, as well as made to abide with, the necessary precautions to minimize infection risks. The WHO as well as the PGH Department of Surgery provide ready references for the organizational and operational arrangements for hospital services during the pandemic.[17,18] Staff may be periodically tested for COVID-19 in line with institutional protocols.[19]

In extreme situations with more pronounced manpower shortages, even personnel who are suspected or confirmed to have COVID-19 infections may continue to work, but only within strictly defined parameters (such as

work-from-home arrangements for telehealth and administrative services).[20] Return to clinical work involving patient care or interactions with other health workers can be allowed only after the infection has been definitively controlled (in compliance with institutional guidelines) and the affected individual is deemed fit to resume these activities.

The course of a pandemic can be dynamic, with consequent variable demands on health care manpower. Plans should be made for enabling the surgical workforce to adapt to the changing needs of patients and the hospital more easily. Regular timely review of workforce requirements, availability and allocation should be done. Provisions must be made for timely **retraining** (especially for key surgical skills or procedures, upon reversion to regular services), periodic **health checks** (including infection status), as well as **counseling and support** services for the concerned staff.

Key Points

1. ***During a health crisis, physicians, including surgeons, are duty-bound to render service, subject to the provision of measures that assure their safety and welfare.***

2. ***In extreme pandemic conditions, when hospital manpower is lacking, surgeons may need to perform tasks outside their expertise or even assume non-surgical roles. Staff should be given training and repeated guidance on, as well as made to abide with, the necessary precautions to minimize infection risks.***

3. ***Should surgical procedures be needed, these should be done or supervised by the most qualified staff.***

4. ***Staff who may already be infected may continue to provide non-frontline work, and only within well−defined boundaries.***

5. ***The status of hospital resouce requirements as well as available surgical manpower should be reviewed regularly, and the appropriate staff allocation to priority areas ensured. Retraining as well as counseling should be provided especially during operational transition periods.***

Chapter II

Trauma Care

Brent Andrew G. Viray

A 35-year-old male and an elderly female were brought to the Emergency Department (ED) with multiple injuries sustained from a vehicular accident. The first patient is a deliveryman and was supposedly not feeling well for the past few days. He was not comfortable wearing a helmet during the trip, so he did not put this on. He had a cloth face mask on, but only wore this loosely. A few minutes before the consult, he felt dizzy, lost control, and sideswiped the second patient before he subsequently fell off his motorcycle. No emergency medical responders were able to go to the accident scene. Bystanders brought both injured motorcyclist and pedestrian to the hospital, using a closed van. At the ED, the motorcyclist was conscious, coherent, and ambulant, with no neurological impairments, and vital signs were normal. There were abrasions, mostly on the left side of the face, as well as ipsilateral epistaxis. There was a painful swelling in the left forearm. The female patient was conscious but non-cooperative. She appeared pale, and was found to be tachycardic, with a blood pressure of 90/50 mm Hg. There was an ecchymotic area at the left subcostal area. Both patients, as well as the three persons who brought them to the ED, had no masks on.

Guide Questions

What are the expectations for emergency medical responders during pandemics?

What added measures are needed in the ED during a pandemic?

Are there any adjustments needed in performing diagnostic procedures, particularly imaging studies, for ED patients?

Should the timing and type of interventions for trauma cases be different from that of the established practice?

How can ED trauma consultations assist in controlling community transmission?

Context

COVID-19 is a new infection, with most of the greater population still vulnerable to the disease. SARS-CoV2 is readily spread by droplets and possibly by airborne route, with transmission possible even from asymptomatic individuals.[21] And with the actual prevalence in many localities being unknown, the determination of the infection status of a given individual in a trauma setting can be particularly difficult. The management of trauma cases relies on rapid assessment and intervention, often involving multidisciplinary teams. Given the inherent difficulty in diagnosing concurrent infection, adjustments must be made to mitigate against the possible exposure risks for all responding health personnel, particularly surgeons.

Ethical Considerations

Many of the ethical principles and values mentioned in the prior chapter also apply to emergent trauma cases. However, there may be inherent conflicts in their applicability for these situations. Timing concerns are more acute, and access to the necessary personal preference and relevant clinical information is often limited. The scenario directly involved only two trauma patients, but may also indirectly concern other persons, including those concurrently handled by the same personnel or facility. The latter circumstance can apply

in the setting of **mass casualty events**, or even a more widespread **humanitarian crisis**. A patient may be determined to need resource-intensive services, the availability of which may be limited due to pandemics.[8]

Thus, individualized patient-centered care, in keeping with the principles of beneficence and autonomy, may therefore not be practicable. During humanitarian crisis, such as with pandemics or other widespread catastrophes, there is a necessary shift in focus from individual to population outcomes—shifting the focus more to concerns related to justice, such as fairness in the allocation of care. Prioritization of patients based on the **utilitarian** approaches (i.e., "for the greater good" wherein what may be beneficial for an individual may be reallocated to be of more pervasive or substantial benefit to others, or favoring the provision of care to patients who have the higher chances for survival) gains more relevance in these circumstances.[22] **Triaging** becomes essential—and this can be applied at the primary (on-scene), secondary (emergency department), or tertiary (operating room).[23] Corresponding **allocation criteria** should also be prospectively drawn up. These are discussed in more detail, in the context of over-all resource allotment, in the fourth and fifth chapters.

Technical Considerations

To limit staff exposure, and even equipment contamination, patient assessment can first be done by a delegated member of the response or trauma team. The so-called "**point**" will have to perform a rapid yet thorough evaluation of the status and corresponding care requirements of the patient.[24] Such an arrangement can be made on-scene as well as in the ED. Additional personnel, supplies, and equipment can, as needed, be subsequently brought closer to the patient.

Trauma care, particularly for the severely injured, takes precedence over the perceived or known infectious disease status of a patient.[25] Inquiries regarding exposure risks or COVID-19 symptoms should be done, but only after the more immediate care requirements of the patient have been addressed. ED facilities should be adequately equipped or laid out to also minimize aerosol or droplet spread (e.g., barriers and ventilation systems).

Patients, and, as in the scenario, persons who accompanied them should have properly worn masks (unless there are any contraindications for this, as with airway compromise).[25] Needless to say, the institution should ensure that staff should have had prior training as well as adequate practice in the corresponding **trauma response protocols**, as modified for pandemic contingencies. These may include routine or selective COVID-19 testing for patients.

Resuscitation measures should be initiated as indicated, as is apparent with the second patient. While neither of the patients appear to need airway access, those who require so (as well as ventilation support) for resuscitation are of special concern, due to the potential transmission of SARS-CoV-2. There are several procedural as well as logistical concerns for **endotracheal intubation**, which needs to be done expeditiously to lessen **aerosol generation** (including the interim use of bag-mask ventilation). In the ED setting, sound **administrative arrangements** (e.g., an experienced staff readily available to perform the procedure), applicable **engineering controls** (e.g., negative pressure areas to minimize aerosol spread), and uniform use of appropriate **personal protective equipment (PPE)** should be in place to address such concerns.[26]

The first patient in the scenario is not in a critical condition but will still require focused assessments specifically of the head, neck, and extremities. The ED staff should be wearing the prescribed PPEs to be able to approach the patient close enough and perform an adequate physical examination. [17,18,27] Evaluation and management guidelines have been released by various medical and surgical groups to minimize infection risks without compromising patient outcomes. Most have espoused **conservative options**, and reserve surgical interventions for situations where these are absolutely necessary.[28] The number of staff who will get to be in close contact with patients should be minimized.[25] Thus, for maxillofacial trauma, specialist consultation can be reserved for apparent injuries to the facial nerve, lacrimal ducts, and other critical structures.[29] Similarly, closed, non-displaced, non-comminuted limb fractures without neural or vascular compromise, as the patient may have, are to be managed non-operatively.[30,31] As general ED access can also be restricted, specialists may not be readily on hand to

evaluate patients. Facilities can opt to have **remote or online means of communication** to enable these consultations.[32]

Following ED assessment and resuscitation, some patients, such as the pedestrian in the example, may urgently require additional services, such as imaging studies or urgent surgical interventions. Diagnostic imaging studies must be judiciously selected, to minimize infection risks in radiology or ultrasound areas. Whenever suitable, therefore, **portable imaging** machines are to be preferentially used.[33] Some hospitals may already be in crisis standing and will not be able to provide more dedicated services, such as surgery or critical care. Allocation of these services are therefore provided selectively, with surgical interventions reserved for absolute emergencies. **Non-operative measures** should be maximized, as may still be possible with solid organ injury as exemplified in the second case, or, if feasible, affected patients can be transferred to more capable hospitals. Prioritization of cases for surgery are discussed further in the fourth to fifth chapters.

Patients directly discharged from the ED will require **follow−up care**. This can be arranged with a more proximate provider, or by online modalities with the ED or hospital staff. Also, to be assessed, if not actively sought, are the possible close contacts of suspected or confirmed COVID-19 patients. Thus, as exemplified in the scenario, the other persons who brought in the patients should be registered at the ED and given advice regarding symptoms to be monitored as well as self−isolation measures. The hospital can thereafter relay the relevant information regarding the index patient's confirmed infection status and give attendant testing and related instructions to the **close contacts**.[34]

Key Points

6. ***Responders should attend to trauma cases expeditiously, but also cautiously—ensuring the protection of patients, personnel, and even equipment.***

7. ***Organizational, structural, and personal protection measures should be in place in EDs to minimize infection risks especially from aerosol-generating procedures. Emergency response protocols, modified for pandemic***

contingencies, should be in place, for which the staff should have had prior training and adequate practice.

8. ***Diagnostic imaging studies should be resorted to only if clinically warranted, with infection protection measures provided to the patient as well as others in the respective areas.***

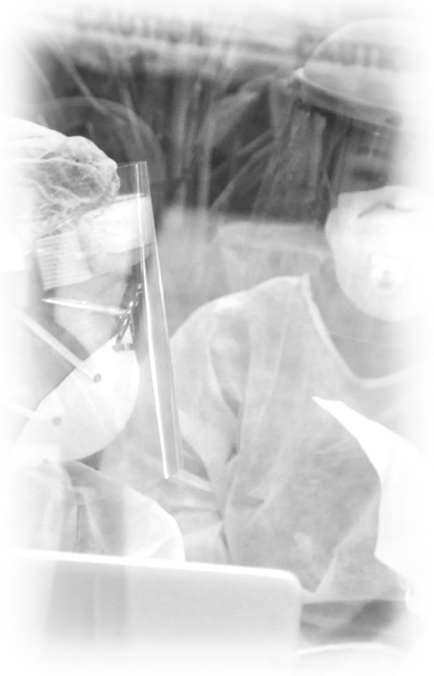
9. ***Non-operative management options are preferably adopted for trauma patients whenever these are appropriate.***

10. ***Symptom monitoring as well as contact tracing procedures should be initiated for ED patients and their companions.***

Chapter III

Hospital Admission

Claudine Rosario B. Lukban



A 3-year-old male is brought to the emergency department after sustaining scald burns. The child was supposedly momentarily left unattended at the dining table and he reached for the handle of a pot with boiling water. This overturned, causing the contents to spill on his right cheek, neck, anterior chest, and upper extremity. He had already been brought to 5 other hospitals by the mother but was not granted admission. At the ED, the child appears listless. His mother has not attempted to feed him since the accident. The assessment is that the child has, at least, partial and full-thickness burns involving 15% of the body surface. It was also noticed that the mother has been coughing incessantly. She reports that she has had a dry cough, fever, and back pain for the past 2 days.

Guide Questions

Should the criteria for hospital admissions change during a pandemic or similar crisis?

How can cases be prioritized for admission in such situations?

What are the options for ensuring care for patients who cannot be admitted to hospitals?

What infection control measures should be in place during the admissions process?

Can parents or guardians accompany inpatients? What would be the expectations for them?

Context

Crises, and the adjustments in the standards of care that these necessitate, were discussed in the first chapter. The modified standards should apply to all related hospital operations to ensure that optimal care is given consistently and equitably.[35] In terms of admissions and perioperative care, procedures and services may need to be revised to conserve hospital resources as well as limit infection risks for patients and providers. Thus, admissions criteria can be amended, and alternative strategies such as networking and even supervised care through telehealth systems can be adopted.[36] The PGH, being a COVID-19 designated hospital, has restricted access for non-COVID-19 patients. Nonetheless, it still has to attend to all emergency cases. Other hospitals continue to cater mainly to non-COVID-19 cases, but also have similar resource constraints and are additionally faced with the challenge of not knowing the actual infection status of any given patient or companion.

Ethical Considerations

The same ethical concerns and principles as raised in the previous chapters apply, particularly by way of the obligations for the provision of service by surgeons, as well as the assurance of adequate protection and infection control measures by the hospital administration. Of added importance in the

present pandemic is the **allocation of scarce resources**. Depending on the prevailing severity of the crisis as well as the internal situation in any given hospital, there can, aside from staff shortages, also be a lack of hospital beds, equipment, or supplies. Scarce resources can be finite, or cannot be extended or transferred once these are committed to use. This is epitomized by organs for transplantation. Thus, there are set criteria that are strictly followed in the allocation of cadaveric organs, to better ensure favorable transplant outcomes. **Non-finite** scarce resources can be resupplied or reassigned to others.[37] Aside from ventilators, ICU beds (and other specialized care unit accommodations, such those dedicated for burn care) may be considered as such in many hospitals during a pandemic. These can either be **withheld or withdrawn** from patients and used for others, for whom the resource may be of more benefit, instead.

There are several criteria that may be considered in allocating non-finite resources, which stem from different norms of **distributive justice**. These may include **treating all patients equally**, **favoring worst-off patients**, or **maximizing total benefits**.[38] In the provided scenario, the patient should be considered for admission on the following ethical grounds: regardless of the patient's COVID-19 status, he deserves to receive the appropriate treatment as any other patient with the same severity or extent of burn (or other injury or illness of the similar gravity); the patient's prognosis can be improved, and therefore benefits maximized, if he is to be admitted and given the corresponding treatment, and; being very young, he is actually in a worse-off situation, in terms of potential years of lives lost should adequate treatment not be given.[39] It has also been argued that pediatric patients, during disaster circumstances, should be given access to care commensurate to their proportional distribution in the population.[40]

Admissions criteria, which is essentially a component of secondary triage, are best made explicit and **rule based**. Any such system should be developed collectively (including consultations with patient representatives), communicated regularly to all stakeholders, and periodically reassessed for relevance to prevailing conditions.[7,41] Surgeons who are involved in the planning or implementation of resource allocation schemes, while understanding the necessity for these, should also not overlook the need to provide **compassionate care**.[42] In the local setting, some cases are referred

to as **"social emergencies"**, wherein the indications for hospital admission are not based primarily on clinical merit as much as the social circumstances of patients (e.g., distant residence, of limited means, etc.). These circumstances deserve additional consideration, as outright denial of admission or further care may have severe adverse consequences on the affected patients. Displaced patients deserve to be given as much attention as possible, and, as discussed further on, provided, as appropriate, coordinated transfers as well as palliative care alternatives.

Technical Considerations

Burn injuries not only cause significant morbidity and mortality, but may also require resource–intensive care—with prolonged hospital stay, specialized accommodations and equipment, repeated surgeries, and substantial rehabilitation requirements.[43,44] Especially for children, burns are potentially physically disfiguring and emotionally distressful. [44,45] Children with burns affecting more than 10% of the total body surface area should receive intravenous resuscitation. Also, their disproportionately thin skin may make the assessment of initial burn depth difficult, underlining the need for continuous assessment of their status and response to treatment. Pediatric patients with severe burn injuries, therefore, require prompt admission and treatment at a burn center, or an equivalent local accommodation, if good outcomes are to be achieved.[46]

For patients with analogous conditions requiring expert inpatient care under pandemic circumstances, there are additional issues that need to be addressed. A hospital, due to resource constraints, may still not be able to accommodate a given patient. It will be important that the patient still receives the necessary care—such as fluid resuscitation and temperature regulation for a burn patient—and arrangement concurrently made for the patient's **transfer to a suitable hospital**. There should be existing arrangements for a **network of facilities** to allow for better coordination of patient transfers and continuity of care.[47] The admissions process should incorporate measures to mitigate against infectious disease transmission. Patients and companions need to be screened as well as required to follow general precautions, such as adequate distancing and use of masks. Hospitals

will need to effectively segregate areas and facilities to minimize exposure risks.[48] Depending on the prevailing incidence and hospital policy, patients and their companions may need to be tested for COVID-19 selectively or routinely.

Pediatric patients, especially the critically ill, benefit from the continued **presence of a parent** or other family member.[49] If they have the same COVID-19 status, then they may stay together but remain isolated from other persons.[50] Should circumstances be otherwise, and more so if the parent gets to be severely ill, then they will need to be maintained physically apart. In such instances, additional measures must be put in place to allow continued parental or family communications with the child. Depending on the child's clinical condition, developmental status, and hospital isolation arrangements, these can be enabled through the presence of alternate companions or by resorting to non-verbal ways (such as writing or gestures through transparent physical barriers), use of electronic media or gadgets, and other means.[51, 52]

Children are just as likely to be infected with SARS-CoV-2 as adults, but are often asymptomatic or only have mild disease.[53,54] They can also present with a peculiar systemic inflammatory response which can lead to, among others, cardiac complications.[55] To minimize transmission risks, pediatric inpatients should also wear masks, unless they are not able to remove these on their own—such as those less than two years of age or older children with impaired capacities.[56]

Key Points

11. ***Admissions criteria can be altered during pandemics to enable hospitals to conserve resources while still providing optimal care to specified patients. The criteria should be developed collectively, communicated broadly, and reassessed periodically.***

12. ***Patients should be assessed on clinical grounds, and priority should be given to those who stand to benefit most from hospital admission, COVID-19 status notwithstanding.***

13. ***Patients who cannot be accommodated in a facility should still receive all necessary care, including, if needed, an arranged transfer to a suitable hospital.***

14. ***Procedural and structural measures will need to be put in place to minimize transmission risks for patients admitted to hospitals.***

15. ***Inpatients, particularly children, are best accompanied by a family member or other designated companion, unless the presence of the latter pose substantial risks for the patient or staff.***

Chapter IV

Emergency Surgeries

Marie Carmela M. Lapitan

The operating room (OR) complex is functioning at reduced capacity due to manpower and logistical issues. Only two operations can be done at any one time. Three patients are at the ED: an 18-year-old male injured from a hacking incident with a partially amputated but viable right upper arm and a gaping flank wound with omental prolapse; a 45-year-old female who is a known diabetic who arrived at the ED febrile, tachycardic, pale with rigid tender abdomen after 3 days of abdominal pain and non-productive cough, and; a 70-year-old hypertensive male, transferred from another hospital after being diagnosed with an intracranial bleed requiring surgery, and seen at the ED with a GCS score of 8. The surgeons of all 3 cases contend that they need to perform the operations on their corresponding patients urgently. The OR manager informs the ED that only one room is available because of a tracheostomy case that has just arrived at the OR. A surgeon attending to one of the patients in the ED insists that the tracheostomy case be deferred so that her patient can have surgery done soonest.

Guide Questions

How should surgical cases be prioritized during pandemics?

Does a patient's COVID status affect eligibility for emergency surgery?

Who should make the decision on which patient requiring emergency surgery should be prioritized?

What should be done when a case is to be deferred and it is known that this will lead to unfavorable outcomes?

Are there additional working arrangements in the ORs during pandemics?

Context

Pandemics can cause human and physical resource shortages in hospitals. These may be due to absolute and substantial increases in demand, reduction in the staff complement (e.g., from sickness), unavailability of facilities (e.g., from contamination), lack of supplies, or from the reallocation of resources. ORs are dedicated areas and will not be suitable for purposes other than providing a safe environment for the performance of surgical procedures. However, the attached manpower is subject to the same vicissitudes affecting the rest of the hospital staff. While regular OR personnel may be reassigned to other areas in the hospital and be made to perform less technically demanding work, the reverse will not be possible. **Surges**, during which there is a relative lack of skilled manpower, yet there is a nearly simultaneous influx of cases requiring emergency surgeries, occasionally happen in many hospitals. But the situation becomes more dire during pandemics, as there can be a more sustained or pervasive shortfall of personnel and even supplies.

Ethical Considerations

When ORs are, due to personnel or material constraints, unable to readily accommodate even emergency surgeries, then these facilities can also be considered as being non-finite scarce resources.[37] As discussed in the last chapter, much like ventilators or ICU beds, the OR suites, should there be an overwhelming demand for their use, can be reserved for or reassigned to

more deserving patients. The same ethical approaches therefore also apply in the described scenario, though the allocation needs to be done much more rapidly.[38] A **triage system** should be adopted for this purpose.

Triage is in line with distributive justice, the branch of ethics that looks into the equitable allocation of benefits and burdens in populations. It supports the values of **human life**, **efficient use of resources**, and **fairness**. As the approach overrides individual's as well as physicians' preferences and, ideally, even point-of-care payment arrangements, then it goes against **autonomy**, **fidelity**, and **ownership of resources**.[57] While it has its roots in military medicine, triage is currently often resorted to in times of mass casualties or disasters. Patients are categorized into: [58]

- those who will probably still die despite treatment,
- those who will probably survive even if not treated, and,
- those who will live only if treated

Patients who are in the last group, based on utilitarian concerns, should be prioritized for treatment. In OR surge situations, tertiary-level triaging can guide the prioritization of cases. As surgical teams can be expected to favor their respective patients, a system that is **objective** and **transparent** — and therefore fair — is needed. Triage criteria are primarily based on the assessed clinical status and prognosis of patients. Nonetheless, given patients in the same clinical tier, such as how the patients in the scenario appear to be, then additional value−based parameters can be included. Thus, if the 45-year-old patient was a health care worker with an important role in the pandemic response, then she can be given more priority due to the added **social value** of her being able to resume these responsibilities subsequently.[38] Given the mixed health system in the country, public and private hospitals provide services to often divergent patient bases. Discriminating the provision of emergency services on financial grounds is both unethical for surgeons and illegal for hospitals.[6,59,60]

Technical Considerations

There are various ways of categorizing the urgency of surgical procedures or interventions. A relatively simple grouping is that which classifies these into **immediate, urgent, expedited,** and **elective**—which correspond to surgeries having to be done to avert an adverse outcome within minutes, hours, days, or later.[61] A similar system has been in place at the PGH, where cases for emergency surgery are correspondingly labeled by the surgeons as belonging to either Class A, B, C, or D, in decreasing order of urgency. Other categorization schemes have been proposed, with the most recent having been developed to be more responsive to the pandemic situation, but these are more applicable to less urgent cases (as discussed further in the next chapter).[62,63]

During crisis levels of hospital care, operations are restricted to emergency cases. This constraint is imposed for pragmatic (e.g., lack of manpower, to conserve supplies especially PPEs, etc.) as well as infection control purposes (e.g., minimize transmission risks perioperatively for both patients and staff).[64-66] To be able to further prioritize emergency, or concurrent immediate or urgent, cases in the OR, another categorization level is needed. The triaging models developed for medical pandemic response may be used for this purpose, with the surgeon's concern for limited OR access being analogous to the internist's dilemmas with lack of ventilators.[7, 41,67,68] There are four basic components of medical triage:

- verification of the need for the intervention, or inclusion criteria
- identification of those likely to die despite interventions with the use of exclusion criteria
- determination of the probability of mortality/survival through a scoring system, and
- monitoring of the patient's status

Patients whose status fall within the exclusion criteria (e.g., cardiac arrest, unresponsive hypotension, irreversible brain injury, etc.) are not given further interventions, though palliative care can be offered. The Sequential Organ Failure, or SOFA, score is often used to prognosticate adult medical patients—and interventions are prioritized for those who, based on summarized clinical indicators and the corresponding ratings, are determined to be most in need of as well as most likely to benefit from these. Other scoring systems have also been utilized.[69,70]As discussed in the ethics section, non-clinical parameters, such as age, may only be secondarily considered.[38,41] Likewise, the triaging options should also be flexible to be relevant to concurrent circumstances, such as changes in the availability of resources, effectiveness of interventions, and even prevailing community values.[71-73] A **triage committee** or officer attends to these determinations, including the monitoring of the response of patients to the interventions.[74] The committee's decision can be appealed in accordance with well-defined arrangements.

There is no identical established triaging scheme for OR allocation for emergency cases, particularly in the setting of a pandemic. Still, elements of the systems used in other crisis may be adopted for prioritizing emergency surgeries.[75] The decision−making process will necessarily need to be abbreviated, given the complex yet more acute requirements for emergent interventions. A **triage officer**, preferably a senior surgical staff, may have to be relied on to provide timely decisions, though committee support will still be needed for interval guidance and review.[23]

Exclusion criteria, which may be identical with those already used by the institution for other interventions (such as ventilator allocation), may be utilized a priori or their elements can be integrated in a singular allocation scheme.[76] Scoring systems that are locally relevant and specific for patients requiring emergent surgical interventions can be developed by individual institutions. These will have to incorporate not only the severity of the patient's condition and corresponding urgency of surgery, but also, under the present circumstances, logistical as well as infection risk concerns. The prioritization systems should also conform to the existing capacities and limitations of the respective hospitals.[77] Thus, the availability of blood products, length of disinfection procedures (which may restrict OR

availability), availability of ventilators for postoperative use, and other relevant details should be considered. Even if patients are suspected to have COVID-19, such cannot be definitively confirmed for most emergent cases. In these instances, only the relevant concurrent diagnoses—such as severe pneumonia requiring assisted ventilation—bear upon the logistical and other triage criteria.

As with any allocation system, the rationale, criteria and procedures used should be made clear to all stakeholders, including patients and families. The criteria should be adaptable to changing operational circumstances, and, time-permitting, selections may be subject to appeal. Should a formal scoring system be utilized, the interface should be user-friendly and allow expedient entry of data and generation of results.

All the cases described in the provided scenario may be deemed to qualify for inclusion, as all require emergent surgeries. The patient already at the OR may not be the priority if, for example, there is no urgent need to establish an airway as an endotracheal tube is in place. Performing a tracheostomy is an aerosol−generating procedure. The OR will need to subsequently undergo **decontamination** using agents and procedures deemed to be effective against SARS-CoV-2, depriving immediate use of the OR for the other urgent cases.[78] All the remaining 3 patients require surgery, and none may be excluded on the basis of being in an already moribund state. The final determination of which 2 patients will then be accommodated first will need to take into account the expected outcomes with immediate surgery (as opposed to a further three-hour delay) as well as attendant logistical requirements (e.g., anticipated need for postoperative ICU care). If already part of the established triage scoring system, additional weight may be given for the younger patient, in line with a **"fair innings"** approach.[23] The latter will favor the 18-year-old patient.

Just as in the ED and other areas of the hospital, structural and procedural measures must also be adopted to enable better **infection control in the OR**. These include designated OR suites, added procedural precautions, and appropriate PPEs.[16,64,65,79,80] To expedite staff readiness, hospitals can consider having dedicated surgical teams already partially donned with

high−level PPEs, on standby for immediate attendance to emergency surgeries.

Key Points

16. ***During crisis standards of care, OR access should be limited to patients in need of immediate or urgent surgical interventions.***

17. ***A triage system, based primarily on clinical parameters, should be instituted to be able to objectively and transparently prioritize emergent surgeries. Triage officers may be designated to facilitate the implementation of the system, including communicating the allocation basis and decisions to patients and their family.***

18. ***Patients known or suspected to have COVID-19, unless there are overriding medical contraindications or logistical constraints, should, in emergencies, still be provided the required surgical care.***

19. ***Patients who, consequent to the application of the triage system, are not prioritized for surgery, should continue to receive supportive care as well as be given alternative options, including palliative care.***

20. ***Structural and procedural adjustments should be adopted to ensure optimal infection control as well as rapid and adequate response in ORs, especially for emergent cases.***

Chapter V

Cancer and Time-Critical Surgeries

Maureen Elvira P. Villanueva

A 60-year-old male had previously undergone a colostomy and neoadjuvant chemoradiotherapy for Stage III rectal cancer. The patient was supposed to be admitted for planned definitive surgery, but this was deferred due to COVID-19-related hospital restrictions. There has now been a two-month delay, and the patient is concerned that this will adversely affect his treatment outcome. He has hypertension, which has remained controlled. He is otherwise asymptomatic, though he has not had any medical assessments in the interim. He has communicated to his surgeon that he would like to be admitted to the hospital soon, and for his operation to proceed as earlier planned.

Guide Questions

Should all elective surgeries be canceled during crisis operational levels in hospitals?

Are the risks higher for patients who undergo surgery during the COVID-19 pandemic?

How can patients requiring time−critical procedures be prioritized?

What are the additional concerns for cancer patients whose treatments have been put on hold during crises?

Can cancer patients still participate in clinical trials in the interim?

Context

The preceding chapters have highlighted how pandemics and other widespread humanitarian disasters can overwhelm hospital capacities. Activities that are deemed non-essential to the overall response are therefore put on hold. Nevertheless, crisis–level situations are not absolute. Circumstances vary over time, and across different localities. The demand for pandemic–related services may shift, or resources may get to be either substantially depleted or augmented. Likewise, patients' situations may also change. The given scenario may be expected when the pandemic is not in its acute stage, or not in a recurrent surge, and facilities and health personnel may already have some leeway to attend to previously overlooked patients. Deferment of care, if unduly prolonged, may become irreversibly deleterious for some patients. Surgical services will, therefore, need to be able to effectively adapt to these exigences.

Ethical Considerations

The previous chapters discussed the resource allocation issues coincident with pandemics. From the mostly utilitarian ethical perspective, the provision of surgery during crisis levels of hospital care is prioritized for emergency cases wherein the intervention is expected to be most beneficial. Patients with non-emergent conditions may, however, have their health status worsen or approach the limits of conservative management, making further delays in surgical intervention untenable. As surges abate, personnel

and logistics become more available and the scope of hospital services can thereby be expanded. Still, hospitals cannot be expected to immediately attain regular operational levels. Thus, there may still be a relative scarcity of surgical services, and not all patients with pressing, though still non-emergent, need for these may get to be suitably accommodated. **Rationing,** or the deliberate allocation of resources for the potential benefit of selected patients, while also denying these from others, may therefore still have to be resorted to.[81] Restricting resources or services go hand-in-hand with triaging, or the selection of which patients will be qualified for these.[38,39,57,58]

The applicable ethical precepts were also alluded to in the second to fourth chapters. Allocation dilemmas largely fall within the bioethical domain of justice, which concerns questions on how to fairly adjudicate competing claims.[82] Arriving at what is just can be challenging particularly in the setting of scarce resources, the realm of distributive justice. There are often competing interests, from individual rights to societal conventions—and there will be those who inevitably lose out. Rationing schemes, in the context of a pandemic, often gives less weight to individual rights. At the least, therefore, steps should be undertaken to **avoid or minimize any consequent harm** to those deemed to be less qualified to receive benefits—or surgical care in the current setting.

The basis and processes used for rationing and triage should be made **explicit**. As also done for other patient prioritization schemes, the selection criteria should **not be based primarily on patients' social characteristics** and other invidious parameters. There should be **equal opportunity to access** among those who qualify for the rationed services.[83] An unbiased implementation will avoid having those delivering the services be burdened with extreme **"rule of rescue"** situations, during which there is an almost uncontrollable impulse to "rescue the doomed".[81] Patients who, following selection, qualify for surgery, should, as part of the informed consent process, be told about the related risks, including potentially worse outcomes due to COVID-19, as further discussed in the next two chapters.[84]

Technical Considerations

The foregoing chapter emphasized the contexts and approaches for interventions which were designated as either immediate or urgent.[61] Patients who have non-emergent conditions and whose required surgery had been purposely delayed due to the ongoing crisis deserve commensurate attention. Continued monitoring, possibly through telemedicine, provision of alternative therapies, and even referral to appropriate facilities may be resorted to for most cases.[66,85,86] Corresponding guidelines on these have been published by several surgical specialty organizations.[28,87] For non-emergent cases, the threat to life or organ viability may not be imminent. There can therefore still be enough time and opportunity to determine as well as preemptively address the attendant risks.

Additional consideration needs to be given for those known or suspected to have COVID-19, as **worse postoperative outcomes** have been reported for these cases.[88-90] Steps should, therefore, be taken to either minimize exposure to the disease or avoid further compromising infected patients, especially for those with cancer.[48,84,91] **Early Recovery After Surgery (ERAS)** protocols, which may be modified to accommodate community or hospital infection control measures, can still be implemented. These are of added value in pandemic situations, given the reduced disease transmission risks with abbreviated hospital stay and attenuated nursing care requirements.[92] **Preoperative assessment for COVID-19** is essential, and the options for doing so, and their implications, are discussed in the final chapter. Of relevance for the presented case, and similar cancer patients, will be the need for diagnostic imaging. Should a CT scan of the abdomen be done, the same study can be used to evaluate the lower chest—or a full chest study done—to check for findings which may be indicative of COVID-19.[93]

Some patients may have **time–critical** conditions or require **medically–necessary–time–sensitive (MeNTS)** procedures and cannot have the respective surgeries put off indefinitely.[63] Cancer cases with lesions which are high–grade or with progressive encroachment on vital organs, fall under these.[86,91,94] Nevertheless, as there can still be an absolute or relative scarcity of resources, then surgical services will need to be rationed even for this tier of patients. A triage system, which spans both secondary and tertiary

levels, will therefore again have to be in place for these situations. Several scoring systems have been proposed for **triaging non-emergent surgical cases** during the current pandemic, including those which have been modified for pediatric application or expanded for cancer surgeries.[63,95,96] The PGH has adopted a related system, administered by an autonomous Surgical Review Committee, and the operational framework for this is shown in the Appendix. The operational and structural constraints, and the demand for specific surgical services, are different for a COVID-19 center like the PGH, and other institutions. The proposed triage systems will, therefore, have to be revised, or more appropriate ones crafted, to better suit local circumstances.

The same triage committee, as mentioned in the preceding chapter, may also oversee the development, implementation, and monitoring of the selection process. Among the resources that may not be readily available even if the crisis is ebbing will be the **supply of blood products**. Transmission of SARS-CoV-2 through blood transfusion has yet to be documented, even as the virus has been isolated from the blood of infected patients.[97,98] However, due to quarantine restrictions and other circumstances, there will be fewer donors to replenish blood stocks.[99] The actual availability of blood products should be taken into account before proceeding with any extensive surgery.

Cancer patients may be participants in **clinical trials**. Aside from the same resource constraints and infection risks, most studies follow strictly defined procedures and schedules. The existing limitations during pandemics may make the protocols unimplementable and even detrimental for the involved cancer patients. It will be prudent, therefore, to defer new trials, or reduce the number of enrolled patients for ongoing studies.[100]

Key Points

21. ***Patients whose conditions may irreversibly worsen with further delays should not be arbitrarily disqualified from receiving the needed surgical care during pandemics.***

22. ***As patients with COVID-19 may have worse postoperative outcomes, then their respective surgical procedures should be deferred unless these are absolutely necessary.***

23. ***If hospital capacities are still relatively limited, triage protocols should be used to objectively prioritize patients with time-critical conditions that require surgery.***

24. ***Cancer patients for whom the required surgical interventions are still not possible should be monitored, given alternative treatments, or referred to more suitable facilities.***

25. ***Further enrollment of cancer patients in clinical trials should be restricted during pandemics.***

Chapter VI

Obstetric and Neonatal Surgeries

Alvin B. Caballes

A 30-year old Gravida 3 Para 2 patient arrived at the hospital complaining of labor pains. Gestation, based on amenorrhea, is 36 weeks. A prenatal ultrasound, as requested by the local health center physician, was done at 28 weeks. The ultrasound report indicated a protuberant mass at the umbilical base of the fetus. She was supposed to return for follow-up consults, but the health center was closed as part of intervening quarantine measures. The family lives in a high COVID-19 incidence area. Over the preceding three days, the patient had a persistent unproductive cough as well as a low-grade fever. She has no prior medical conditions. No other household members are ill. Her 2 previous deliveries, both at local health facilities, were normal. The patient was brought by her husband, who insisted that they had earlier decided that a cesarean delivery was not acceptable.

Guide Questions

How should decisions regarding obstetric care be arrived at?

What is the importance of knowing the COVID-19 status of pregnant patients?

Should the timing and mode of delivery be different, depending on the COVID-19 status of the pregnant patient?

What aspects of neonatal care have to be modified?

Are there additional requirements for neonatal surgery during pandemics?

Context

Pregnancy is a normal physiologic process for which well-established assistive care and, if needed, more specialized obstetric services, are generally available. However, during pandemics and other pervasive calamities, additional uncertainties and risks come into play. Though access to health services, and particularly hospital care, may, in crisis situations, be restricted to medical emergencies or the critically ill, allowances for obstetric cases—by and large healthy patients—still need to be provided. Likewise, for nearly all these cases, at least two patients, the mother and the newborn, will require care. The personnel, facility, and other resource requirements are therefore commensurately higher for every obstetric patient. The provided scenario further underscores this, given a prenatal assessment indicating that the fetus has an anomaly for which neonatal surgical intervention may be needed.

Ethical Considerations

The importance of recognizing patients' autonomy has been raised in the previous chapters. In the obstetric setting, this is exemplified by the acknowledgment that expectant mothers have **inherent rights** related to their perinatal care. Beneficence as well as non-maleficence (as embodied by the phrase, ***primum non nocere***) are key ethical principles which are acknowledged and observed by physicians, and are the cornerstones of **professional ethics**.[5,101] While often consistent, there can be occasions when

patients' and physicians' interests or preference may diverge.[102] For instance, a patient (or father, as mentioned in the presented case) may want a specific mode of delivery, or even subscribe to a particular infant feeding practice, which physicians may deem to be inappropriate given the maternal or fetal circumstances. For the presented case, similar concerns apply to the patient-pediatric surgeon interaction. Again, the obstetrician, pediatrician or neonatologist, and pediatric surgeon may concur on the preferred manner and timing of delivery, yet the mother (or family) may prefer otherwise. During pandemics, as discussed in the earlier chapters, resource constraints may further limit the available options for health professionals as well as patients. As alluded to in the second chapter, this lays the foundation for the necessary shift from **individual care–based ethics** to a greater emphasis on public health concerns or population outcomes.[103]

Existing constraints should not be forcibly enforced in a paternalistic demeanor as much as these are explained as part of a participative **informed consent process**. The decision-making, as exemplified in the scenario, should also be a shared activity involving the father. For the presented and similar cases, efforts should be exerted, especially by the obstetrician, to determine the reasons, if not apprehensions, underlying the patient or partner's preferences. By getting to know these, the perceived concerns may be better addressed, and a mutually agreeable and sound course of action may then be decided on.

Properly going through and documenting the process is additionally important, as this will best address, if not preempt, conflicts between physicians and patients.[104] All **medically reasonable alternatives**, or interventions which are technically feasible as well as of net benefit to patients, should be presented in the appropriate manner, tone, and language to patient and even family.[105] Risks should be relayed, and should include those which may relate more to unpleasant patient experiences (e.g., postoperative pain, catheterization, etc.). As emphasized in the next chapter, the added risks and precautions attendant to COVID-19 should be disclosed. Patients' queries and concerns should be answered clearly and honestly, and an explicit **recommendation for the superior alternative** may be given if this exists and is requested for. The process should, clinical circumstances permitting, not be overwhelming for the patient. Thus, a separate session can

be set, for the presented case, to obtain the patient's informed consent for subsequent newborn care, including surgery.[106] The surgeon or a delegated member of the surgical team should undertake the discussion with the patients and family members, and ensure that the corresponding **consent forms are duly signed** and the **consultations properly documented**.[105] Arrangements for subsequent family communications are also best discussed early, including allowances for the involvement of the father or relations—subject to applicable infection measures.[107,108]

Technical Considerations

While pregnancy is said to be an **immunomodulated state**, the incidence of COVID-19 among pregnant patients follows the prevailing community rates.[109,110] Likewise, the pattern of disease severity is not different from that of the general adult population, with most infected patients having mild disease and those with prior medical illness being more likely to have more critical courses.[111-113] Maternal deaths have been reported among those with severe disease.[114] **Preterm labor** has been found to occur more often among COVID-19 patients.[112,115]

Afflicted obstetric patients can be asymptomatic during the time of delivery, posing transmission risks for the attending staff as well as other patients. There is a high concordance in positivity rates between patients and companions, even if these are asymptomatic.[116] As medical attendance during labor may be prolonged, repeated, involve several personnel in close proximity, and may even require emergent interventions (and aerosol-generating airway access procedures), the potential infection hazard can be substantial for the obstetric staff.

Aside from routine symptomatic or exposure screening of patients and companions, universal testing for the presence of SARS-CoV-2 for them have been advocated to mitigate infection risks.[116,117] At the least, patients who are highly suspected of having the disease should be tested.[118] The attendant details, particularly for RT-PCR tests, are covered in the next chapter. Among obstetric patients, test yields have been variable, being minimal in low incidence areas, and considerable false negative rates have also been reported.[119,120] Despite these limitations, there are as yet no better

alternatives to RT-PCR testing, and these are still used to guide patient segregation as well as personnel protection measures.[116]

Chest imaging studies have also been considered as primary or ancillary means for diagnosing COVID-19, and are further taken up in the next chapter.[116,117] Of particular relevance in the obstetric setting, and certainly for the presented case wherein a fetal anomaly is suspected, is the **extended use of prenatal ultrasound scans** for assessing the pulmonary status of pregnant patients.[121]

Physical and operational infection control arrangements, as similarly in place in the rest of the hospital, should apply in the designated obstetric areas. The use of PPEs is graduated, depending on exposure risks. Masks are uniformly required even for patients and their companions. Cases highly suspected or confirmed to have COVID-19 require additional precautions and should be managed in accordance with applicable local guidelines or institutional protocols.[122]

The **timing and mode of delivery** for affected obstetric patients should be in line with the standard obstetric or fetal indications.[123] **Induction of labor** may be resorted to as indicated, with careful consideration to infection exposure risks. COVID-19, by itself, is not a contraindication to **vaginal delivery**, including operative means, and apparently does not pose additional risk of transmission.[124] **Cesarean delivery** may be the primary option in the event of maternal respiratory distress.[123,125] For the case at hand, should ultrasound studies demonstrate the presence of fetal omphalocoele, particularly the giant type with herniated liver, then a cesarean section will be definitely indicated.[126] It is worth noting that higher perinatal morbidity rates have been reported for COVID-19 patients who underwent cesarean sections, though these may also be attributable to the concurrence of more severe underlying disease or even infection.[127] The appropriate PPEs should be worn by the obstetric, anesthesia, pediatric and nursing staff attending to the delivery.[128]

The value of **antenatal steroids** to aid preterm lung development has been established for specific settings.[129] However, steroid administration should be used with caution for suspected or confirmed COVID-19 pregnant patients.[123,125] Similarly, **magnesium sulfate** use, whether for fetal or

maternal indications, should be weighed thoroughly as this may cause respiratory depression for mothers with compromised pulmonary functions from severe COVID-19.[132]

The care of the neonate should essentially follow established Essential Intrapartum and Newborn Care (EINC) procedures.[130] **Delayed cord clamping** is still recommended.[131,132] Neonates whose mothers are suspected or confirmed to have COVID-19 need to be tested by the 24th hour of life. **Vertical transmission** of SARS-CoV-2 has been reported, but this has not been documented to be a frequent occurrence or of clinical consequence.[133,134] **Temporary isolation** will be needed if the mother is markedly symptomatic or severely ill. Similarly, preterm newborns as well as those with significant medical conditions are also best kept separate.[135] SARS-C0V-2 particles as well as antibodies have been detected in breast milk.[136,137] However, this has yet to be shown to cause disease, and breastfeeding is therefore still recommended.[138] This can be permitted even for mothers with mild symptoms or disease, so long as they wear masks and observe hygiene measures while breastfeeding.[139] Masks should not be placed on newborns and infants. If breast milk is to be expressed and stored, aseptic collection techniques should be followed. Collected milk can still be sent to **milk banks**, where these are heat-treated before being sent to other recipients.[127]

The expected newborn in the presented case is presumed to have an abdominal wall defect.[140] Should this be a gastroschisis, the surgical options range from bedside reduction of the herniated viscera and closure of the defect soon after birth to staged procedures. Omphalocoeles will not require interventions as urgently. There are higher chances for concomitant structural and chromosomal anomalies, however.[141] Procedures to be done at the OR for the neonate are subject to the same concerns of patients requiring immediate or expedited procedures, as discussed in the two preceding chapters. Other than the added isolation and infection control measures, and possibly OR and neonatal ICU (NICU) availability constraints, there are no added requisites for their care during pandemics.[142,143] Opportunities for parental bonding during the neonate's stay in the NICU should be provided, being important for the neonate's comfort and development as well as the parents' emotional well-being.[144]

Key Points

26. ***Decisions regarding obstetric care should be arrived at by the patient herself, after an adequate discussion of appropriate options with the concerned health professionals.***

27. ***The COVID-19 status of a pregnant patient should be ascertained at the appropriate time. This will facilitate the adoption of the necessary infection control measures and thus minimize the risks to the obstetric and pediatric staff as well as other patients.***

28. ***The timing and mode of delivery is to be based primarily on obstetric or fetal indications. Caesarean delivery may be the preferred option for pregnant COVID-19 patients with respiratory distress.***

29. ***Standard EINC practices should still be followed, though modified to incorporate the necessary infection control measures. Temporary isolation can be arranged for neonates whose mothers are markedly symptomatic or severely ill due to COVID-19. There are few contraindications to breastfeeding in the current pandemic setting.***

30. ***Neonates who require surgery are subject to the same precautionary measures and resource constraints as other surgical patients. Parental presence is essential in the over-all care of newborns, and therefore should, subject to infection control measures, be allowed in NICUs.***

Chapter VII

Perioperative Contingencies

Samantha Jiselle G. Siahetiong

A 52-year-old female was diagnosed to have calculous cholecystitis 6 months ago. She has hypertension as well as diabetes, for which she took medications irregularly. Three days ago, she had a dry cough and low-grade fever. Later that day, she experienced right upper quadrant pain. She called up her physician and was prescribed an oral antibiotic and analgesic. The pain persisted, and she also became jaundiced and her fever spiked. Upon checking with the same physician, she was advised to go to a tertiary hospital for treatment. The patient was admitted at a nearby hospital, where intravenous hyoscine butylbromide, antipyretic, and antibiotics were administered. A nasopharyngeal swab was performed for a SARS-CoV-2 PCR test. An ultrasound study demonstrated dilated bile ducts, with opacities in the gallbladder as well as distal common bile duct. In a few hours, the patient became agitated. The vital signs were: temperature39°C, heart rate 140 beats/min, blood pressure 100/60, respiratory rate 60 breaths/min, O_2 saturation (room air, pulse oximeter) 85%. There was a disagreement among the staff on whether any procedural intervention should be done as well as when, if ever, one should be undertaken.

Guide Questions

Should all surgical patients undergo preoperative testing for COVID-19?

How should decisions regarding the appropriateness of procedures be arrived at?

Are there additional precautionary measures in providing anesthesia for surgical patients?

Should specific surgical procedures or interventions be avoided during pandemics?

What are the postoperative concerns for suspected of confirmed COVID-19 cases?

Case Context

The preceding discussions had dealt with the various aspects of resource allocation and patient prioritization, given the scarcity of logistics at various phases of a pandemic. The presented scenario looks at the procedural implications given the same extreme conditions. Thus, knowing that a patient requires urgent intervention, the next concerns will be determining which will be the more appropriate option, as well as the corresponding preparations, under the prevailing circumstances. The bases for arriving at the optimal course of action for a specified patient are examined in the succeeding sections.

Ethical Considerations

The attendant ethical concerns regarding the provision of hospital services by physicians and surgeons during health crises were taken up in the earlier parts of this book. These—such as the duty to care, reciprocity, non-maleficence, and others—remain relevant to the case at hand. Resource allocation and patient triage considerations also apply, though these are not highlighted in the scenario. Even as there is an apparent deterioration in the presented patient's condition, there is a divergence in opinion as to what should be done for her. Settling such differences comprise another aspect of professional ethics.[145]

Differences in opinion occur, and are integral to a culture of openness inherent in many disciplines.[145] Professional disagreements are usually settled by consensus, but such may not be possible especially when the comparative benefits, or risks, from different approaches are not clear.[146] Related issues, such as conflicts with senior surgical colleagues or staff from other departments, and perceived incompetence of professionals, have been reported.[147] Should circumstances permit, **second opinions** from qualified clinicians may be sought either by the surgeons or patients themselves.[5,148] The national Code of Ethics for the Medical Profession prescribes that should there be **irreconcilable differences**, then the matter should be referred to the corresponding institutional ethics or mediation committee.[4] The latter measure may not be an option in the event of urgent cases, however.

Patient's **autonomy**, or right to self–determination, should also be given due importance. This is embodied in the informed consent process.[149] Aside from being appraised of the diagnosis as well as prognosis, the patient needs to be made aware of all the pertinent treatment alternatives and their anticipated consequences—and be allowed to indicate the preferred course of action. COVID-19-related risks and infection control protocols, and facilities or procedures that may be consequently withheld or withdrawn, should be made explicit. During emergencies wherein the patient is incapable of willfully giving consent, and relations are not available, then surgeons may proceed with the necessary interventions without obtaining the corresponding consent.[5]

While still not widely accepted locally, patients, particularly those who are critically ill, may be requested to discuss **advance care planning** or accomplish **advance directives**.[150] The latter can specify the preferences of patients, or surrogate decision-makers, regarding resuscitation, life support, and related issues. These have become more relevant in the setting of the COVID-19 pandemic, given the heightened risk of severe illness and concomitant shortage of critical care accommodations.[151,152]

These concerns are relevant for the present case as well as others with similar circumstances. The patient apparently has cholangitis and, as she already has signs of sepsis, then a further deterioration in her over-all condition is likely. It is not certain if she is lucid enough to participate in the

deliberations regarding therapeutic options, if not also still be capable of comprehending the added risks and care requirements should COVID-19 be confirmed. If at all still possible, therefore, the patient's informed consent for the selected procedure/s as well as advance care directives should be sought. Otherwise, these can be obtained from the duly designated family or kin, in their capacity as surrogate decision-makers.

Technical Considerations

An overriding concern under the current circumstances is the added risks from COVID-19. The infection may be present in patients who may be asymptomatic or have symptoms which overlap with those of the primary surgical condition. Uninfected patients may also be at risk, either from community or iatrogenic transmission. As mentioned in the fifth chapter, concurrent COVID-19 may be associated with poorer postoperative outcomes.[87-89] The identification of patients who are either at high-risk for or already have the infection is therefore important.

Preoperative testing for SARS-NCoV-2 has been advocated to lessen operative morbidities as well as minimize transmission risks. Nucleic acid amplification, such as by real-time polymerase chain reaction **(RT-PCR)**, as well as **antibody detection** tests are available.[153] While the former is presently the more reliable modality, the diagnostic accuracy can vary widely depending on the sample source and timing.[64,154] Yields may also depend on the prevailing incidence rates of the infection.[155] **Universal**, and repeated, testing would be ideal. [156-158] This may not, however, be practical in many settings due to availability or cost constraints. Other protocols incorporate **chest x-ray or CT scans**, routinely or selectively for high-risk patients, in the absence of PCR testing.[61,159] Preoperative mandatory isolation and **selective** testing for suspicious cases or patients for high risk (e.g., aerosol-generating) procedures have been recommended locally.[160] Patients, so long as the surgical disease does not acutely worsen, are allowed to undergo surgery only if they remain asymptomatic following the prescribed isolation period, or, if earlier confirmed to have COVID-19 by PCR, only if the related symptoms improve and two successive tests are negative.[64] There have been no trials, however, which have prospectively established the effectiveness of

testing or screening protocols. It must also be kept in mind that while preoperative screening, as well as testing for COVID-19, may greatly help in guiding surgical plans as well as resource management, these do not obviate the need for environmental and personal safety precautions.[161,162]

For the case at hand, the urgently required intervention should still proceed, subject to informed consent, even if the test result is still unavailable. There are several options, including **endoscopic** as well as **open** or **laparoscopic** surgical procedures.[163,164] These have their inherent advantages and disadvantages and added presumed risks for SARS-CoV-2 dissemination. Endoscopic as well as laparoscopic approaches have been hypothesized to present substantial aerosol generation hazards, for which reason their use have been discouraged.[165-167] Nonetheless, similar risks are posed with open surgical techniques and the availability of expertise for performing specific procedures can vary across settings. The choice of the actual interventions should therefore also take into consideration which of the alternatives can, given the prevailing local circumstances, be done safely and expeditiously.[168-170]

Physical and procedural adjustments should be made to mitigate transmission risks in the OR. Among others, these include: having dedicated **"hot" rooms**, equipment and personnel for surgeries involving COVID-19 suspected or confirmed cases, or high-risk interventions; adjusted anesthesia procedures, particularly for airway management, and; personnel and facility decontamination.[161,162,171-173] Respiratory precautions should continue to be observed in the postoperative period. Patients need to be properly segregated according to known or presumed COVID-19 status. **Nursing care** should be provided following strict infection control measures.[172-175]

Key Points

31. ***Preoperative testing for SARS-CoV-2, by nucleic acid amplification, should be done as much as possible . Regardless of the testing regimen, screening and risk-based segregation of patients and facilities should be followed.***

32. ***Surgeons, physicians, and anesthesiologists need to determine the most suitable procedural options for specific cases. Patients or their designated***

representatives should, circumstances willing, be allowed to make informed decisions on the course of action, and, especially for those who have significant risk for adverse operative outcomes, be given the opportunity to execute advance directives.

33. ***Anesthetic procedures, particularly in terms of airway management, should be modified to limit aerosol generation and infection transmission risks.***

34. ***Surgical procedures that are known or presumed to also be aerosol-generating are best avoided. In the event that these are necessary, then mitigating measures should be concurrently used to limit contamination.***

35. ***Appropriate infection control physical arrangements and procedures should be observed in providing postoperative care to patients.***

Appendix

Surgical Review Committee
SURGICAL PRIORITIZATION SCORING SYSTEM [1] FOR ELECTIVE CASES

STEP 1: PRE-SCREENING of Patients for Elective Surgery. NOT INCLUDED in FINAL COMPOSITE SCORE of the patient.

- In selecting patients for screening, consider the following:
  - Backlog Malignancy Cases
  - Non-deferrable Non-malignancy Cases
  - Patients who have completed their most recent Preoperative Evaluations (Repeat Imaging Diagnostics, PATEC Evaluations, Negative Swab Testing, etc)

PATIENT FACTORS: to be used as a pre-screening tool.

Factor	1 pt	3 pts	5 pts
Age (years)	Below 50 y.o.	51 to 65 y.o	above 65 y.o.
Lung Disease (asthma, COPD, CF)	None	Minimal (rare inhaler)	More than minimal
Obstructive Sleep Apnea	None	Mild (no CPAP)	Moderate (on CPAP)
CV Disease (HPN, CHF, CAD)	None or Mild (1 med)	Moderate (2 meds)	Severe (≥ 3 meds)
Diabetes	None or Mild (no meds)	Moderate (PO meds)	> Moderate (insulin)

Score Range: 5 to 25
Prioritize patients with lower scores for elective surgery.

STEP 2: Consider the following PROCEDURE FACTORS that contain variables which pose "a burden to the limited hospital resources" during this pandemic crisis.

PROCEDURE FACTORS (40% weight)

Variable	1 pt	3 pts	5 pts
OR time, in hours	3 hours or less	More than 3 hours to 5 hours	More than 5 hours
Postoperative ICU need (%)	< 10%	11-25%	> 25%
Surgical Site	Other sites	Abdominopelvic	OHNS, Upper GI, thoracic
Estimated Postoperative Length of Stay	1-2 days	3-4 days	5 days or more
Anticipated Blood Loss	< 500	500 – 1 Li	> 1 li

Note: Weight given to Procedure Factors might vary according to prevailing conditions in the community regarding COVID-19.

STEP 3: Consider the following DISEASE FACTORS that contain variables which represent "a clinical burden for the patient" whose surgical treatment was already delayed during this pandemic crisis.

DISEASE FACTORS: (60% weight)

Variable	1 pt	3 pts	5 pts
Effectiveness of Non-operative treatment option	None Available	Available, < 50% as effective as surgery	Available, > 50% as effective as surgery
Availability/Accessibility of an effective Non-operative treatment option/modality	Not Available & /or Inaccessible	Moderately available &/or Accessible	Readily Available &/or Accessible
Non-operative treatment option resource/exposure risk	Significantly worse/not applicable	Equivalent	Significantly better
Impact of a further 4-week delay in disease outcome	Significantly worse	Moderately worse	No worse
Impact of a further 4-week delay on surgical difficulty/risk	Significantly worse	Moderately worse	No worse
Predicted patient functionality 30 days after surgical intervention*	ECOG 0-1 Karnofsky 70-100	ECOG 2-3 Karnofsky 50-60	ECOG 4 Karnofsky 20-40

* Predicted ECOG PERFORMANCE STATUS [2] after surgical intervention

0	Fully active, able to carry on all pre-disease performance without restriction
1	Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature, e.g. light house work, office work
2	Ambulatory and capable of all self-care but unable to carry out any work activities; up and about more than 50% of waking hours
3	Capable of only limited self-care; confined to bed or chair more than 50% of waking hours
4	Completely disabled; cannot carry on any self-care; totally confined to bed or chair

*Karnofsky Performance Status [3] after surgical intervention

100	Normal, no complaints; no evidence of disease
90	Able to carry on normal activity; minor signs or symptoms of disease
80	Normal activity with effort, some signs or symptoms of disease
70	Cares for self but unable to carry on normal activity or to do active work
60	Requires occasional assistance but is able to care for most of personal needs
50	Requires considerable assistance and frequent medical care
40	Disabled; requires special care and assistance
30	Severely disabled; hospitalization is indicated although death not imminent
20	Very ill; hospitalization and active supportive care necessary

STEP 4: Add scores obtained in Steps 2 & 3 to obtain patient's COMPOSITE SCORE.

STEP 5: Arrange List of Patients' Composite Scores from Lowest to Highest.

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